



```
LL      IIIIII  BBBB BBBB DDDDDDDD AAAAAA YY YY
LL      IIIIII  BBBB BBBB DDDDDDDD AAAAAA YY YY
LL      II      BB      BB DD      DD AA      AA YY YY
LL      II      BB      BB DD      DD AA      AA YY YY
LL      II      BB      BB DD      DD AA      AA YY YY
LL      II      BB      BB DD      DD AA      AA YY YY
LL      II      BBBB BBBB DD      DD AA      AA YY YY
LL      II      BBBB BBBB DD      DD AA      AA YY YY
LL      II      BB      BB DD      DD AAAAAAAAAA YY YY
LL      II      BB      BB DD      DD AAAAAAAAAA YY YY
LL      II      BB      BB DD      DD AA      AA YY YY
LLLLLLLL IIIIII  BBBB BBBB DDDDDDDD AA      AA YY YY
LLLLLLLL IIIIII  BBBB BBBB DDDDDDDD AA      AA YY YY
```

```
....
....
....
....
```

```
LL      IIIIII  SSSSSSSS
LL      IIIIII  SSSSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SSSSSS
LL      II      SSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SS
LLLLLLLL IIIIII  SSSSSSSS
LLLLLLLL IIIIII  SSSSSSSS
```



(2) 45  
(3) 52  
(4) 96

Edit History  
DECLARATIONS  
LIB\$DAY - Return day number as a longword integer

```
0000 1      .TITLE  LIB$DAY - Get number of days since zero date
0000 2      .IDENT  /1-002/                               ; File: LIBDAY.MAR
0000 3
0000 4 :
0000 5 :*****
0000 6 :*
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0000 24 :
0000 25 :*
0000 26 :*****
0000 27 :
0000 28 :
0000 29 :++
0000 30 : FACILITY: General Utility Library
0000 31 :
0000 32 : ABSTRACT:
0000 33 :
0000 34 : LIB$DAY returns a longword integer containing the number of days
0000 35 : since the system zero date of November 17, 1858. This is useful
0000 36 : for keeping track of transaction dates, for the values can be
0000 37 : easily subtracted and compared, unlike ASCII date formats.
0000 38 :
0000 39 : ENVIRONMENT: User Mode, AST Reentrant
0000 40 :
0000 41 :--
0000 42 : AUTHOR: Steven B. Lionel, CREATION DATE: 04-April-1979
0000 43 :
```

LIBSDAY  
1-002

- Get number of days since zero date<sup>G 7</sup>  
Edit History

15-SEP-1984 23:55:05 VAX/VMS Macro V04-00  
6-SEP-1984 11:05:13 [LIBRTL.SRC]LIBDAY.MAR;1

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(2)

0000 45 .SBTTL Edit History  
0000 46 :  
0000 47 : 1-001 - Original. SBL 04-Apr-1979  
0000 48 : 1-002 - Return day number explicitly, to conform with LIB\$ standard.  
0000 49 : Add day\_time result. SBL 28-Jun-1979  
0000 50 :



```
0000 52      .SBTTL  DECLARATIONS
0000 53      :
0000 54      : INCLUDE FILES:
0000 55      :
0000 56      :
0000 57      :
0000 58      : EXTERNAL DECLARATIONS:
0000 59      :
0000 60      :      .DSABL  GBL                      ; Prevent undeclared
0000 61      :                                          ; symbols from being
0000 62      :                                          ; automatically global.
0000 63      :      .EXTRN  $$$_INTOVF                ; Integer overflow
0000 64      :
0000 65      :
0000 66      : MACROS:
0000 67      :
0000 68      :
0000 69      :
0000 70      : EQUATED SYMBOLS:
0000 71      :
0000 72      :
0000 73      :+
0000 74      : Stack offsets for local values:
0000 75      :-
00000000 0000 76      :      SYSTIM = 0                ; System quadword time
00000008 0000 77      :      YEAR = 8                  ; Year number (not used)
0000000A 0000 78      :      MONTH = 10                 ; Month number (not used)
0000000C 0000 79      :      DAY = 12                   ; Day number (not used)
0000000E 0000 80      :      HOUR = 14                   ; Hour of day
00000010 0000 81      :      MINUTE = 16                  ; Minute of hour
00000012 0000 82      :      SECOND = 18                  ; Second of minute
00000014 0000 83      :      HUNDREDTHS = 20               ; Hundredths of seconds
0000 84      :
0000 85      :
0000 86      : OWN STORAGE:
0000 87      :
0000 88      :
0000 89      :
0000 90      : PSECT DECLARATIONS:
0000 91      :
00000000 0000 92      :      .PSECT _LIB$CODE PIC, USR, CON, REL, LCL, SHR, -
0000 93      :      EXE, RD, NOWRT, LONG
0000 94
```

```
0000 96 .SBTTL LIB$DAY - Return day number as a longword integer
0000 97 :++
0000 98 : FUNCTIONAL DESCRIPTION:
0000 99 :
0000 100 : LIB$DAY is a routine which returns the number days
0000 101 : since the system zero date of November 17, 1858. Optionally,
0000 102 : the caller can supply a quadword by reference containing a
0000 103 : time in system time format to be used instead of the system
0000 104 : time.
0000 105 :
0000 106 : An optional return argument is a longword integer containing
0000 107 : the number of 10 millisecond units since midnight.
0000 108 :
0000 109 : Day zero is November 17, 1858.
0000 110 :
0000 111 : NOTE: If the caller supplies a quadword time, it is not
0000 112 : verified at all. If it is negative (bit 63 on), the day_number
0000 113 : value returned will be negative.
0000 114 :
0000 115 : CALLING SEQUENCE:
0000 116 :
0000 117 : status.wlc.v = LIB$DAY (day_number.wl.r, [user_time.rq.r
0000 118 : [, day_time.wl.r]])
0000 119 :
0000 120 : INPUT PARAMETERS:
0000 121 :
0000 122 : user_time = 8 ; Optional. A quadword containing
0000 123 : a time in 10 microsecond units.
0000 124 : If omitted, the current system
0000 125 : time will be used.
0000 126 : One way for FORTRAN programmers to
0000 127 : provide a quadword is to declare:
0000 128 : INTEGER*4 TIME(2)
0000 129 :
0000 130 : IMPLICIT INPUTS:
0000 131 :
0000 132 : NONE
0000 133 :
0000 134 : OUTPUT PARAMETERS:
0000 135 :
0000 136 : day_number = 4 ; A longword integer containing the
0000 137 : number of days since the system
0000 138 : zero date.
0000 139 : day_time = 12 ; The number of 10 millisecond (.01 second)
0000 140 : units since midnight.
0000 141 :
0000 142 :
0000 143 : IMPLICIT OUTPUTS:
0000 144 :
0000 145 : NONE
0000 146 :
0000 147 : COMPLETION CODES:
0000 148 :
0000 149 : $$$_NORMAL - Successful completion.
0000 150 : $$$_INTOVF - The optional argument user_time is present and represents
0000 151 : a date past the year 8600.
0000 152 :
```



```
0000 153 ;--
0000 154
4000 0000 155 .ENTRY LIBSDAY , ^M<IV> ; Entry point
0002 156
5E 18 C2 0002 157
0005 158
0005 159
02 6C 91 0005 160 CMPB (AP), #<user_time/4> ; Create quadword block for
0B 19 0008 161 BLSS 10$ ; system time plus result block
08 AC D5 000A 162 TSTL user_time(AP) ; for SNUMTIM.
06 13 000D 163 BEQL 10$ ; Optional arg present?
6E 08 BC 7D 000F 164 MOVQ @user_time(AP), SYSTIM(SP) ; No
0C 11 0013 165 BRB 20$ ; Omitted by reference?
0015 166 ; Yes
0015 167 10$: $GETTIM_S SYSTIM(SP) ; Get system time
73 50 E9 001E 168 BLBC -R0, ERROR ; Should NEVER happen, but
0021 169 ; is good practice to check.
0021 170
51 50 6E 3B9ACA00 8F 7B 0021 171 20$: EDIV #1000000000, (SP), R0, R1 ; Convert to number of days.
04 BC 50 00000360 8F C7 002A 172 DIVL3 #864, R0, @day_number(AP) ; and store.
03 6C 91 0033 173 CMPB (AP), #<day_time/4> ; Day time requested?
51 19 0036 174 BLSS EXIT ; No
0C AC D5 0038 175 TSTL day_time(AP) ; Omitted by reference?
4C 13 003B 176 BEQL EXIT ; Yes
04 AE D5 003D 177 TSTL SYSTIM+4(SP) ; Is system time negative?
10 18 0040 178 BGEQ 30$ ; No
6E 6E D2 0042 179 MCOML SYSTIM(SP), SYSTIM(SP) ; Yes, force it positive
04 AE 04 AE D2 0045 180 MCOML SYSTIM+4(SP), SYSTIM+4(SP)
6E D6 004A 181 INCL SYSTIM(SP)
04 AE 00 D8 004C 182 ADWC #0, SYSTIM+4(SP)
3B 1D 0050 183 BVS OVFL0 ; Overflow?
50 5E D0 0052 184 30$: MOVL SP, R0 ; Save stack pointer
0055 185 $NUMTIM_S YEAR(R0), SYSTIM(R0) ; Get numeric time
30 50 E9 0061 186 BLBC -R0, ERROR ; Error?
50 50 7C 0064 187 CLRQ R0 ; Find time in units of .01 secs
50 0E AE 3C A5 0066 188 MULW3 #60, HOUR(SP), R0 ; R0 has minutes
50 10 AE A0 0068 189 ADDW2 MINUTE(SP), R0
50 3C C4 006F 190 MULL2 #60, R0
51 12 AE B0 0072 191 MOVW SECOND(SP), R1 ; R0 has seconds
50 50 51 C0 0076 192 ADDL2 R1, R0
50 00000064 8F C4 0079 193 MULL2 #100, R0
51 14 AE B0 0080 194 MOVW HUNDREDTHS(SP), R1
0C BC 50 51 C1 0084 195 ADDL3 R1, R0, @day_time(AP) ; store .01 seconds
0089 196
0089 197 EXIT: MOVL #1, R0 ; Return with SSS_NORMAL
50 01 D0 0089 198 RET
04 008C 199
008D 200
008D 201 OVFL0: MOVL #SS$_INTOVF, R0 ; Return with error status
50 00000000'8F D0 008D 202
0094 203 ERROR: RET ; Return with error status
04 0094 204
0095 205 .END
```



LIB\$DAY  
Symbol table

- Get number of days since zero date <sup>K 7</sup>

15-SEP-1984 23:55:05  
6-SEP-1984 11:05:13

VAX/VMS Macro V04-00  
[LIBRTL.SRC]LIBDAY.MAR;1

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(4)

DAY\_NUMBER = 00000004  
DAY\_TIME = 0000000C  
ERROR = 00000094 R 01  
EXIT = 00000089 R 01  
HOUR = 0000000E  
HUNDREDTHS = 00000014  
LIB\$DAY = 00000000 RG 01  
MINUTE = 00000010  
OVFLO = 0000008D R 01  
SECOND = 00000012  
SS\$ INTOVF \*\*\*\*\* X 00  
SYS\$GETTIM \*\*\*\*\* G 01  
SYS\$NUMTIM \*\*\*\*\* G 01  
SYSTEM = 00000000  
USER\_TIME = 00000008  
YEAR = 00000008

-----  
! Psect synopsis !  
-----

PSECT name	Allocation	PSECT No.	Attributes														
ABS	00000000 ( 0.)	00 ( 0.)	NOPIC	USR	CON	ABS	LCL	NOSHR	NOEXE	NORD	NOWRT	NOVEC	BYTE				
LIB\$CODE	00000095 ( 149.)	01 ( 1.)	PIC	USR	CON	REL	LCL	SHR	EXE	RD	NOWRT	NOVEC	LONG				

-----  
! Performance indicators !  
-----

Phase	Page faults	CPU Time	Elapsed Time
Initialization	29	00:00:00.04	00:00:03.70
Command processing	114	00:00:00.31	00:00:03.99
Pass 1	106	00:00:00.49	00:00:06.84
Symbol table sort	0	00:00:00.01	00:00:00.01
Pass 2	51	00:00:00.28	00:00:03.17
Symbol table output	3	00:00:00.01	00:00:00.02
Psect synopsis output	2	00:00:00.01	00:00:00.01
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	307	00:00:01.15	00:00:17.74

The working set limit was 1050 pages.  
3174 bytes (7 pages) of virtual memory were used to buffer the intermediate code.  
There were 10 pages of symbol table space allocated to hold 18 non-local and 3 local symbols.  
205 source lines were read in Pass 1, producing 11 object records in Pass 2.  
3 pages of virtual memory were used to define 3 macros.

-----  
! Macro library statistics !  
-----

Macro library name	Macros defined
_\$255\$DUA28:[SYSLIB]STARLET.MLB;2	3

18 GETS were required to define 3 macros.

LIBSDAY  
VAX-11 Macro Run Statistics

- Get number of days since zero date<sup>L 7</sup>

15-SEP-1984 23:55:05 VAX/VMS Macro V04-00  
6-SEP-1984 11:05:13 [LIBRTL.SRC]LIBDAY.MAR;1

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There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS\$:LIBDAY/OBJ=OBJ\$:LIBDAY MSRC\$:LIBDAY/UPDATE=(ENHS:LIBDAY)



0205 AH-BT13A-SE  
VAX/VMS V4.0

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